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Risk Components and Banks Performance in Nigeria: A Panel Data Approach

Yusuf, ABDULLAHI * and Yusuf Olatunji, OYEDEKO

Department of Business Administration, Ahmadu Bello University Zaria
yabdul50@gmail.com*, oyedekoyusuf@gmail.com

Abstract: The banking sector is viewed as an important source of financing for many businesses. In order to appraise and weigh up the soundness and reliability of banking industry, the information on the risk and how the fluctuations are managed are important to consider. Among the financial risks liquidity is one of the most crucial to consider. Appalling financial condition of the banks has led to incessant decrease in the banks value of assets. The study examined the impact of risk components on the banks performance in Nigeria. Data was source from a ten years annual reports and financial statements of fourteen listed banks at the Nigerian stock exchange and a panel data estimation technique adopted. The result showed that the credit risk indicators of ratio of total equity to total asset and ratio of equity to depositors to short-term funding has positive and negative effect respectively on return on asset (ROA). Also the liquidity risk indicator of ratio of net loan to total asset and net loans to deposit and short-term funding has negative and positive effect respectively on ROA. In view of this, the study recommended setting up credit policy that will not negatively affects profitability and liquidity model which predicts the liquidity requirements of banks should be designed so that they can fix up any liquidity risk and its problems within a reasonable tolerance.

Key words: Risk components, Panel data, Bank performance

1.0 Introduction

Banks play crucial roles in propelling the entire economy of any nation, of which there is need to reposition it for efficient financial performance through a reform process geared towards forestalling bank distress. The banking sector traditionally occupied a pivotal position in the Nigerian economy and played a dominant role in the development of society. The sector has been subject to many external (legal, social and technological) factors, as well as internal changes (personnel status and movement) and these factors influence the profitability, stability and improved growth and expansion. In spite of this, the Nigerian financial sector is at its infancy undergoing series of reforms because many of the banks have not been able to establish firm risk management framework particularly credit risk management in order to prevent unfavourable events.(Oluwafemi, Israel, Simeon, & Olawale 2013).

Today, credit risk management constitutes a critical component of a comprehensive approach to risk

management in banking sector (Arora & Kumar, 2014). Poorly managed credit risk may cause liquidity risk resulted in insolvency of the commercial banks. To minimize the introduction to terrible obligation, over-saving and liquidations, banks must have more prominent understanding into client budgetary quality, financial assessment history and changing instalment designs (Nkusu, 2011).

Vast researches that have been carried out on the risk management in quantitative view lies on improving the measurement and management on single types of risk while missing out on the interdependence of other specific risks such as liquidity, market, and credit risks. It is on this note that the study examines the risk components and the banks performance in Nigeria using data approach. The main objective of the study is to examine the impact of risk components on the Nigerian banks performance within the scope of 14 listed Deposit money Banks in Nigeria stock exchange as 2014 for the duration of ten years which span from 2005 to 2014. The fundamental question in this study is: to what extent do risk component impact on the banks profitability in Nigeria? To answer this question the remaining part is structured thus: section two reviewed literature on risk components and banks profitability, section three outlines the methodology adopted for the study. Data analysis and discussion were presented in section four while section five concludes the paper and proffer recommendations.

2.0 Literature review

The most common measure of bank performance is profitability. Generally, accounting profits are the difference between revenues and costs. From the literature the most common used profitability ratios are return on asset and return on equity.

Return on Assets (ROA) is net profit/total assets, it shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments (Ahmed, 2009). Return on assets indicates the profitability on the assets of the Bank after all expenses and taxes (Van Horne 2005). It is a common measure of managerial performance (Ross, Westerfield, Jaffe 2005). It measures net earnings per unit of a given asset,

moreover, how bank can convert its assets into earnings (Samad & Hassan 2000).

Return on Equity (ROE) is net profit/ total equity. ROE is the most important indicator of a bank's profitability and growth potential. It is the rate of return to shareholders or the percentage return on each naira of equity invested in the bank. Return on equity indicates the profitability to shareholders of the Bank after all expenses and taxes (Van Horne 2005). Hence the study adopt the return on assets as a measure for profitability this is due to the fact that it serves as a measure of managerial performance and in line with the risk management, management performance is an essential tool.

Liquidity Risk

Liquidity indicates the ability of the bank to meet its financial obligations in a timely and effective manner. Inability of banks to meet their obligation lead to loss of confidence and it pose risk. From the literature, there various liquidity ratio that can be used to measure liquidity risk but this study use the following ratios.

Net Loans to total asset ratio (NLTA)

Net Loans to total asset ratio (NLTA) is measures the percentage of assets that is tied up in loans. Net loan to total assets ratio (NLTA) is also another important ratio that measures the liquidity condition of the bank. NLTA measures liquidity of the bank in terms of its total assets. That is, it gauges the percentage of total assets the bank has invested in loans (or financings). The higher is the ratio the less the liquidity is of the bank. Similar to LDR, the bank with low NLTA is also considered to be more liquid as compared to the bank with higher NLTA.

Equity to depositors and short-term funding (EDSTF)

The equity to depositors and short-term funding measures the amount of permanent funding relative to short-term potentially volatile founding. Higher ratio is the better indicator for the capital adequacy of bank.

Equity to total assets (ETA)

This ratio is one of the standard ratios used to ascertain the overall financial stability of banks. Its measures the level of leverage used by a banks. This ratio is proportion of the total assets that are

financed by stockholders and not creditors. Low ratio will be good result for shareholders where the bank managerial performance well.

Net Loans to Total Assets (NLTA)

A net loan to total assets is measure the percentages of assets are tied up in loan. The higher ratio indicates to less liquid banks, the value of this ratio is the smallest values through all liquidity ratios.

Empirical Review

Aduda, and Gitonga (2011) examined the relationship between credit risk management and profitability in commercial banks in Kenya. Both qualitative and quantitative methods were used. A regression model was used to do the empirical analysis. The used ROE as the indicator of the profitability in the regression analysis and NPLR (NPL ratio) as the independent variable because it is an indicator of risk management. The results obtained from the regression model show that there is an effect of credit risk management on profitability at a reasonable level. The findings and analysis reveal that credit risk management has an effect on profitability in all the commercial banks analysed. However, the study did not test for any assumption of OLS model in order to validate the finding.

Kargi (2011), examined the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were the data collected from the annual reports and accounts of sampled banks from 2004 - 2008. Descriptive, correlation and regression techniques were used in the analysis. The findings revealed that credit risk management has a significant impact on the profitability of Nigeria banks. Therefore, management need to be cautious in setting up a credit policy that might not negatively affects profitability and also they need to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits. However, the study did not test for any assumption of OLS model in order to validate the finding.

Ahmed and Malik (2015) conducted a study to evaluate the influence of credit risk management practices on loan performance (LP) while taking the credit terms and policy (CTP), client appraisal, collection policy (CP) and credit risk control (CRC) as the

dimensions of the credit risk management practices. The primary data in cross sectional form has been taken into consideration. Multiple regression analysis has been used for empirical relationship evaluation. The results of the analysis are showing that the credit terms and client appraisal have positive and significant impact on the LP, while the CP and CRC have positive but insignificant impact on LP. The study is helpful for the management to enhance the LP by focusing on the dimension of the credit risk management practices used in the study. However, the choice of four dimensions of the credit risk management practice was not justified in the study.

Adam, (2014) investigated the financial performance of Erbil Bank for Investment and Finance, Kurdistan Region of Iraq during the period of 2009-2013. Several financial performance parameters are used such as financial ratios analysis which is used to measure the financial position for the bank. The findings of the study show the positive behaviour of the financial position and it is found that the overall financial performance of Erbil Bank is improving in terms of liquidity ratios, assets quality ratios or credit performance, profitability ratios (NPM, ROA, and ROE). This study suggests a set of recommendations regarding the development and enhancing of some banking operations which will boost the bank's profitability and improve the financial performance for the bank. The method used to gather the data were clearly explained.

Mutua,(2015) carried out a research to investigate the effect of mitigating credit risk to the performance of commercial banks currently operating in Chuka Town in Tharaka Nithi County. The study opted for both primary and secondary forms of data using questionnaire and annual report respectively. Data was analysed using descriptive statistics involving percentages. The study found out that the banks had policies and strategies of mitigating credit risk which has direct impact on their performance. Also it was found that there was a significant relationship between bank performance (in terms of return on asset) and credit risk management (in terms of risk identification, monitoring and credit sanctions. Better credit risk

management results in better bank performance. However, the study made use of questionnaire in collecting data which can be subjective and sometimes bias and this may affect the finding of the study.

Buchory (2015) analysed the effect of credit risk and operational efficiency to the banking profitability. Credit risk as proxy with non-performing loans (NPLs), operational efficiency as measured by ratio of operating expense to operating income (OEOI) and banking profitability as measured by return on assets (ROA). The method used is descriptive and verification method, with secondary data from financial statements of 26 Regional Development Bank in Indonesia. Multiple linear regressions was used for hypothesis testing while using T - test to examine the effect of partial variables and F - test to examine the effect of variables simultaneously with a significance level of 5 %. Based on the results, it is concluded that the partial, NPLs has positive and significant effect to ROA; while the OEOI has negative and significant effects to the ROA. However, the study did not test for any assumption of OLS model in order to validate the finding.

Oluwafemi, Israel, Simeon, and Olawale (2013) focused on the association of risk management practices and bank financial performance in Nigeria. Secondary data sourced was based on a 4year progressive annual reports and financial statements of 10 banks and a panel data estimation technique adopted. The result implies an inverse relationship between financial performance of banks and doubt loans, and capital asset ratio was found to be positive and significant. The study concluded that a significant relationship between banks performance and risk management. Hence, the need for banks to practice prudent risks management in order to protect the interests of investors. However, the criteria of selecting the sample was not justified.

Funso, Kolade, and Ojo (2012) carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010). Five commercial banking firms were selected on a cross sectional basis for eleven years. Return on Asset

(ROA), as a function of the ratio of Non-performing loan to loan & Advances (NPL/LA), ratio of Total loan & Advances to Total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. Panel model analysis was used to estimate the determinants of the profit function. The results showed that the effect of credit risk on bank performance measured by the Return on Assets of banks is cross-sectional invariant. Based on our findings, it is recommended that banks in Nigeria should enhance their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to banks' compliance. The methodological weakness is that the study failed to carry out hausman test to determine the appropriate model between the Fixed effect and random effect model.

Rengasamy, (2014) examined the impact of Loan Deposit ratio on the profitability of Malaysian commercial banks for the period of 2009 to 2013. The study included all the eight locally owned commercial banks in Malaysia. Loan deposit ratio of the banks was the independent variable of the study. The dependent variable was profitability which measures through Return on Assets (ROA). Data were obtained from the annual reports of the banks. The ratio analysis along with descriptive, correlation analysis, paired T- test and regression analysis were used in this study. The result of the study indicated that there was a positive and non-significant impact of LDR on ROA is five banks (Bank 1, 2, 3, 4 and 8). Further the study revealed that only one bank (Bank 5) had a negative and non-significant impact of LDR on ROA and bank 7 had positive and significant impact. However, the study did not test for any assumption of OLS model in order to validate the finding.

Olusanmi, Uwuigbe and Uwuigbe (2015) investigated the impact of effective risk management on bank's financial performance. The Ordinary least square Regression analysis was employed and data was collected from the annual reports of banks listed on the floor of the Nigerian Stock Exchange. The study observed that there exist a negative non-significant relationship between risk management proxies and bank's performance as captured with return on equity. Thus financial performance

cannot be explained away by the compliance or non-compliance to Basel's regulation by financial institutions, but could be as a result of the accumulation of minor difficulties and inconsequential malfunction of the individual actors resulting in a massive breakdown. However, the methodological weakness is that the use of The Ordinary least square Regression analysis was not justified.

Most of the literature reviewed made use of ordinary least square Regression in examine the impact of the risk management on the banks performance. This means that there is scanty literature on the use of pooled regression thus the study intends to fill this literature gap.

Theoretical framework

Loan Pricing Theory

Banks cannot always set high interest rates, e.g. trying to earn maximum interest income. Banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1981). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behaviour or so called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodecai, 2004). This theory underpins the study because it tries to give reasons for credit and liquidity risk which affect the profitability of the banks.

3.0 Methodology

The population the study comprise all the deposit money banks as at 31 December, 2014. The sample of the study will be arrived at through census sampling technique. Thus, the sample of the study comprises of all 14 deposit money banks listed at the Nigerian Stock Exchange as at 31st December 2014. The data was obtained from annual reports and financial statement of the banks. Because the data contains information on cross sectional units observed over time, a panel data estimation technique is adopted. This allows us to perform statistical analysis and apply inference techniques in either the time series or the cross–section dimension.

The model takes the form: Yit = α0 + βit Xit + +eit……. (3.1)

Where i = 10 cross sections and periods t =2006...2014. Y*it* is a dependent variable which represents bank profitability measured by return on asset (ROA) and X*it* is a vector of the independent variables which represent liquidity, and credit risks. These variables are ratio of net loans to total asset, net loans to deposit and short-term funding, ratio of total equity to total asset, ratio of equity to depositors and short-term funding. They have been selected on the basis of their potential relevancy to this model, and because of their importance in depicting a bank's real financial position. Some of the independent variables will vary over time and cross sections, whereas others will only vary across sections. The intercept α ***i*** varies across banks to capture the specific effects for each bank.

A priori expectation

The 'a priori expectation' in the model is that all the independent variables are expected to have a positive relationship on bank performance measured by Return on Assets (ROA) except ratio of net loans to total asset which is expected to have a negative relationship with bank performance.

The study uses panel data regression model in the analysis. The technique of panel data estimation takes care of the problem of heterogeneity in the 5 Banks selected for the study. Also, by combining time series of cross-section observation, panel data give more informative data, more variability, less co-linearity among the variables, more degree of freedom and more efficiency (Gujarati & Sangeetha, 2007).

4.0 Data presentation and Interpretation

Regression analysis was carried out using three models under the panel approach which include the pooled regression model, fixed effect model and random effect model on but the explained and explanatory variable. The pooled regression does not distinguish among the fourteen selected bank and it denies the heterogeneity or individuality that exist among the bank. This considered not desirable. One way to take into account the individuality of each company is to let the intercept vary for each company but still assume that the slope coefficients are constant

across firms. The term "Fixed Effect "is due to the fact that although the intercept may differ across individuals (that is, the five banks), each individual's intercept does not vary over time. That is, it is time invariant. This is the major assumption under this model. That is, while the intercept are cross-sectional variant, they are time invariant while the random effect model have common mean for the intercept. After the analysis a hausman test was carried out to determine which model is appropriate. The result of hausman test is shown below.

Hausman Test Result

Test summary	Chi square stat.	Chi-sq df	Prob.
Cross-section random	3.959442	4	0.4115

Source: Researcher computation from E-view 9 output.

The hausman test is used to choose which model is appropriate between the fixed effect model and random effect model. The test is with a null hypothesis that Random effect model is appropriate and the alternate hypothesis is that fixed effect model is appropriate. Since the p-value < 5% we can reject the null hypothesis and accept the alternate hypothesis. Hence, the result of fixed effect model is presented below:

Regression Model Result

	Coefficients	Std. Error	T-Statistic	Prob.
Constant	0.000312	0.017408	0.017900	0.9857
RNLTA	-0.763446	0.136967	-5.573951	0.0000
RNLDSTF	1.056041	0.198114	5.330472	0.0000
REDSTF	-3.109170	0.405554	-7.666468	0.0000
RETA	2.397643	0.276103	8.683885	0.0000
R-squared	0.534138			
A R-squared	0.469223			
F-statistic	8.228248			0.00000

Source: Researcher computation from E-view 9 output.

The total variation in the profitability measured by ROA, due to the change in the independent variables equals to 64%, and the determination coefficient equals 53%. This shows that there is strong relationship between the explained and explanatory variable and the prob (F-statistic) confirmed the

fitness the model. From the table, the result showed that the credit risk indicators of ratio of total equity to total asset and ratio of equity to depositors to short-term funding has positive and negative effect respectively on ROA. Also the liquidity risk indicator of ratio of net loan to total asset and net loans to deposit and short-term funding has negative and positive effect respectively on ROA. The entire variables are statistically significant at 5% and conform with the a priori expectation except the ratio of net loan to total asset.

The positive effect of ratio of total equity to total asset as a measure of credit risk was in line Kurawa and Garba (2014) in their findings that credit risk management as measured by capital adequacy variable has a significant positive effect on the financial performance, the explanation for this equity to total assets ratio is expected to have positive relation with performance that well-capitalized banks face lower costs of going bankrupt which reduces their costs of funding and risks.

From the result, it was shown that this variable (ratio of net loan to Deposit short-term funding) has a positive effect on profitability. This result is in line with Rengasamy,(2014). This is the result of the interest rate difference between what the banks charging on loan and what they actually paying on the deposits. Whenever this ratio increases more and more, the bank becomes more and more risky as the loan amount would be equal or sometimes greater than the deposit amount. As a result banks suffer with a liquidity problem and that may also makes the bank risky.

The result shows that ratio of equity to deposit and short-term funding has positive impact on profitability of the banks. The ratio of equity to deposit and short-term funding as a measure of credit risk has positive impact on profitability. This in line with the findings of Olufemi etal, (2013). The explanation for this is that an increase in ratio of equity to deposit and short-term funding will enhance the banks' depositors and lenders protection and also maintains confidence in the banking system. Hence, the banks performance is improved.

The result shows that ratio of net loans to total asset has negative impact on the

profitability of the banks. This means the liquidity risk ratio has negative impact on the profitability of the banks and this is in line with the finding of Adam (2014). The explanation for this is that liquid assets have no or little interest generating capacity. Also the opportunity cost of holding low return assets would eventually outweigh the benefit of any increase in the banks liquidity resiliency as perceived by funding markets, Mashhad (2012).

5.0Conclusion and Recommendations

The study examines the impact of risk components on banks profitability in Nigeria based on panel data analysis for the period 2005 to 2014. The data was analysed by using fixed effect model through E-view statistical package version 9. The study concluded that the total variation in the profitability measured by ROA, due to the change in the independent variables equals to 64%, and the determination coefficient equals 53%. This show that there is strong relationship between the explained and explanatory variable and the prob(F-statistic) confirmed the fitness the model. From the table, the result showed that the credit risk indicators of ratio of total equity to total asset and ratio of equity to depositors to short-term funding has positive and negative effect respectively on ROA. Also the liquidity risk indicator of ratio of net loan to total asset and net loans to deposit and short-term funding has negative and positive effect respectively on ROA. The entire variables are statistically significant at 5% and conform with the a priori expectation except the ratio of net loan to total asset.

In view of this, the study therefore makes the following recommendations:
The bank management need to be cautious in setting up a credit policy that will not negatively affects profitability and also they need to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits and maximization of profit.

Also, there is need for proper liquidity management and if possible a model should be design to predict banks' liquidity requirements daily. Since the present study has established that liquidity risk has impact on banks profitability", the best solution is to create a liquidity model which predicts the liquidity requirements of banks so that they can fixed up any liquidity risk and its problems within a reasonable

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tolerance. At least, the model should be able to estimate the optimal amount of required liquidity daily.

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